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CONTINUOUS TREATMENT WITH FIXED COMBINATION OF LABA/ICS CAN AVOID COSTS OF HOSPITALIZATION IN ASTHMA AND COPD IN GERMANY

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OBJECTIVES: To assess the impact of continuity of treatment on hospitalization rate and costs of hospitalization in patients with asthma or COPD treated with fixed combination (fc) of long-acting b2-agonists (LABA) and inhaled corticosteroids (ICS). **METHODS:** For this retrospective analysis, German IMS Disease Analyzer with longitudinal electronic medical record was used to identify patients with at least one diagnosis of asthma (ICD10 J45) or COPD (J44) in the study period October 2007–September 2008, at least one fc-prescription in the first quarter of the study period and physician visits in all four quarters. The population was subdivided by diagnosis (asthma and COPD) and by SHI status (pensioners and insured-persons/qualified-family-member). Hospitalization rate was used as an indicator to assess the impact of continuity of treatment (continuous treatment (ct): at least one prescription of fc in each quarter, non-continuous treatment (nct): at least one prescription of fc in 1–3 quarters). Published data based on German DRGs were used to calculate hospitalization costs. **RESULTS:** Of 106,911 patients with asthma or COPD, 2,486 insured-persons/qualified-family-member and 1.692 pensioners met the inclusion criteria for asthma; 801 insured-persons/qualified-family-member and 2,389 pensioners for COPD. In each of these subgroups, the proportion of patients with ct is significantly ($p < 0.05$, Wilcoxon) higher in patients without hospitalization compared to with hospitalization. The risk for hospitalization was increased 1.4 to 1.7-fold in patients with nct ($p < 0.05$) compared to patients with ct. The estimated associated additional hospitalization costs for sick funds per 10,000 patients were 370,000–960,000 EUR/year for the different subgroups of patients. **CONCLUSIONS:** There is a strong impact of continuity of treatment on hospitalization rate of patients with asthma or COPD. Continuous treatment with fixed combination LABA/ICS can avoid asthma or COPD related hospitalizations and therefore offers potential for cost savings.

PRS39

ADHERENCE AMONG COPD SUBJECTS ON TIOTROPIUM AND FLUTICASONE/SALMETEROL

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OBJECTIVES: Compare adherence, defined as persistence and compliance, in subjects with chronic obstructive pulmonary disease (COPD) initiated on tiotropium bromide or fluticasone/salmeterol therapy. **METHODS:** This retrospective inception cohort study used claims from a large national US health plan. Subjects with COPD were selected for the study if they had ≥1 fill of tiotropium or fluticasone/salmeterol between December 1, 2004 and December 31, 2005 and ≥12 (up to 18) months of continuous enrollment. Persistence was defined as days from the index prescription to the first 60-day gap in the index drug. Subjects with a medication possession ratio (MPR) ≥80% were "compliant" and MPR <80% were "non-compliant." Persistence and compliance were modeled with Cox proportional hazard and logistic regressions, respectively. Covariates included index drug, demographics, baseline COPD severity, and comorbidities. **RESULTS:** The sample comprised 1561 tiotropium and 2976 fluticasone/salmeterol subjects. Seventy-eight percent of tiotropium subjects had a 60-day gap in index therapy versus 89% of fluticasone/salmeterol subjects ($p < 0.001$). tiotropium subjects were more compliant than fluticasone/salmeterol (20% vs. 9%, $p < 0.001$). Mean length of persistence was 95.9 days for tiotropium vs. 77.3 for fluticasone/salmeterol ($p < 0.001$). Cox regression showed that tiotropium subjects were significantly more persistent with their index therapy than were fluticasone/salmeterol subjects (hazard ratio for occurrence of 60-day gap: 0.72; confidence interval (CI): 0.67–0.77). Logistic regression results showed tiotropium subjects were significantly more likely to be compliant vs. fluticasone/salmeterol subjects (odds ratio: 2.25; CI: 1.85–2.73). **CONCLUSIONS:** Tiotropium subjects were significantly more adherent than fluticasone/salmeterol subjects. The results can have important implications for management of COPD. Additional research in different COPD populations should be undertaken to investigate these findings further.

PRS40

MEDICATION USE AND ASTHMA CONTROL – ANALYZING ECONOMIC TRADEOFFS USING INSURANCE CLAIMS DATA

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Recommended care (Expert Panel Report 3, NAEPP 2007)) for severe asthma patients may entail expenditure on controller medications that could lead to nonadherence to prescription asthma medications. Consequently, nonadherence may increase the likelihood of asthma exacerbations that could increase long term health care cost. **OBJECTIVES:** This paper examines if nonadherence to controller medications increases total health care expenditure for severe asthma patients over time due to increased frequency of severe exacerbations. **METHODS:** Insurance claims from the Marketscan© database were used to select continuously-enrolled individuals who had inpatient admissions or emergency room visits in 2005 with asthma as the principal diagnosis. These individuals, considered to suffer from severe asthma, were followed through the end of 2006 to assess the impact of medication use on the recurrence of severe asthma exacerbations (i.e., repeat hospitalization or emergency department visit) and subsequent increased medical expenditure. For every individual, the American Lung Association classification of asthma medication was used to classify prescription medications into controller and reliever categories. **RESULTS:** 1) Ten percent of the sample in 2005 had an exacerbation in 2006. Results from a Probit model with selection indicated that individuals using less controller medication were more likely to experience a recurrence of asthma exacerbation, and 2) Results from the two-part and Heckman selection models indicated that increase in use of controller medications was associated with increased expenditure on prescription medications but lower hospitalization and emergency visit expenditure due to exacerbations. **CONCLUSIONS:** The cross-sectional nature of the data precludes inferences about causality between medication use and asthma-related expenditures. However, the financial tradeoffs (between prescription drugs payments and possible exacerbation-related expenditure) facing asthma patients have implications for adherence to prescribed medications and effectiveness of long-term asthma control. More research is required to examine how modifications in insurance payments can improve adherence to asthma medications.

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APPROPRIATE USE OF INHALED CORTICOSTEROID AND LONG-ACTING β-AGONIST COMBINATION THERAPY AMONG ASTHMA PATIENTS

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OBJECTIVES: To examine appropriateness of initiation of ICS/LABA combination therapy, according to US National Heart, Lung and Blood Institute guidelines, among asthma patients. **METHODS:** A retrospective cohort study of asthma patients (aged 12–64 years) from the PHARMetrics database who initiated fluticasone salmeterol combination (FSC) or budesonide formoterol combination (BFC) therapy from 7/1/2007–6/30/2008 was conducted. Index date was defined as first ICS/LABA combination medication claim during this time period. Patients were excluded if they had used ICS/LABA combination medication and/or were not continuously enrolled during the year before the index date (pre-index period) or had a COPD diagnosis. Medical and pharmacy utilization was examined for the pre-index period. ICS/LABA combination therapy use was considered appropriate if within the pre-index period patients had any of the following criteria: controller medication (ICS or leukotriene receptor antagonist [LTRA]) use; asthma-related emergency room (ER) visit or hospital admission, >2 bursts of oral systemic corticosteroids; or >6 short-acting β-agonist (SABA) canisters. Factors associated with appropriate ICS/LABA combination therapy use were assessed by multivariate logistic regression. **RESULTS:** Of 16,205 patients who initiated ICS/LABA combination therapy, 1,417 had BFC and 14,788 had FSC. Among these patients, 55.6% of BFC patients compared with 37.9% of FSC patients met all of the criteria for appropriate use. Prior controller medication use was significantly higher for BFC than FSC patients (45.7% vs. 26.1%; $P < 0.001$), and prior ICS medication use comprised most of the difference (31.1% vs. 11.0%; $P < 0.001$). BFC users were more likely than FSC users to meet all of these criteria (odds ratio, 1.74; 95% CI, 1.59–2.00; $P < 0.001$) after controlling for other factors including age, gender, region, comorbidities, and prescriber specialty. **CONCLUSIONS:** A significantly greater proportion of BFC than FSC users were appropriate for ICS/LABA combination therapy based on prior controller medication use or high-risk criteria. Supported by AstraZeneca LP.

PRS42

CURRENT PATTERNS OF FIXED AND FREE LABA/ICS COMBINATION USAGE IN ASTHMA SHI PATIENTS IN GERMANY

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OBJECTIVES: Objective of this analysis was to evaluate the current usage of fixed and free combinations of long-acting b2-agonists (LABA) and inhaled corticosteroids (ICS) using real-life electronic medical record data. **METHODS:** In a retrospective data analysis using Germany IMS disease analyzer with longitudinal medical records for the period October 2007-September 2008, patient records were extracted. Patients had to have at least one diagnosis of asthma(ICD10-J45) and at least one GP visit in each quarter of the study period and at least one prescription of LABA (formoterol or salmeterol) or fixed combination (ATC R3F) in the first quarter of the study period to make sure patients had chronic asthma. LABA-treated patients were analyzed by number of quarters with concomitant treatment of ICS. Hospitalization rate was considered as indicator to assess treatment outcomes. **RESULTS:** Of 3969 patients receiving at least one prescription of fixed combination, 40.3% received continuous treatment (i.e. at least one prescription per quarter). In total 1124 patients had at least one single-agent LABA prescription in the study period, 42.9% of these received continuous LABA-treatment while 12.1% received continuous LABA + ICS treatment. Continuous treatment with free combination of ICS and LABA was associated with a significantly lower risk of hospitalization compared to non-continuous treatment of free combination ($p = 0.01$; Fisher's Exact). Of patients continuously treated with LABA, 32.8% did not receive any ICS prescription in the study period. **CONCLUSIONS:** Continuous treatment with free combination was much less frequent than with fixed combinations. In contrast to general asthma treatment guidelines and drugs' labels of LABA, a significant proportion of patients received only LABA and no ICS. The results of this analysis were in line with the FDA's expert panel's concerns of potentially inappropriate use of LABA in asthma treatment.